Int Journal of Social Sciences Management and Entrepreneurship 9(2): 31-39 2025

ISSN 2411-7323

www.sagepublishers.com

TECHNOLOGICAL INNOVATIONS AND PERFORMANCE OF LOGISTICS FIRMS IN NAIROBI CITY COUNTY, KENYA

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ABSTRACT

In an era marked by increasing globalization and competition, logistics firms must adopt advanced technologies to remain agile and competitive. This study investigates the influence of technological innovations on the performance of logistics firms in Nairobi City County, Kenya. The study focused on key technological tools including car tracking, route monitoring, and smart packaging, and how these innovations contribute to operational efficiency, customer satisfaction, and overall firm performance. Anchored on the Technology Acceptance Model (TAM), the study employed a cross-sectional survey design and targeted 742 logistics firms under the Kenya International Freight and Warehousing Association, using simple random sampling to select 260 respondents. Primary data was collected via structured questionnaires and analyzed using SPSS (version 26). Regression and correlation analyses revealed a strong, positive, and statistically significant relationship between technological innovations and firm performance. The findings underscore the importance of adopting advanced technologies to drive efficiency, reduce costs, and enhance customer experiences in the logistics sector. The study recommends the integration of state-of-the-art systems such as predictive analytics, automation, and digital tracking tools as core elements of strategic planning in logistics firms.

Key words: Technological Innovations, Firm Performance, Logistics Firms, Nairobi, Technology Adoption

Introduction

The logistics industry in Kenya, particularly in Nairobi City County, is undergoing rapid transformation driven by globalization, evolving customer expectations, and the need for efficient supply chain systems. However, many logistics firms continue to face operational challenges including high transportation costs, service delays, and limited digital infrastructure (Mwangi & Ngugi, 2021). As the regional commercial hub, Nairobi's logistics sector is critical to trade facilitation and economic development, yet it struggles with suboptimal adoption of emerging technologies that could enhance competitiveness and efficiency (Kimani & Kihara, 2020).

Technological innovations—such as automated vehicle tracking, digital route monitoring, and smart packaging—are revolutionizing logistics processes globally. These technologies improve visibility, facilitate real-time decision-making, and streamline supply chain operations (Prajogo & Olhager, 2019). In particular, route monitoring and car tracking systems enable firms to optimize delivery paths, reduce fuel consumption, and enhance on-time delivery performance. However, despite their proven benefits, many Kenyan logistics firms have yet to fully embrace these tools due to financial constraints, skill gaps, and organizational resistance to change (Chuttur, 2009; Mungai & Karanja, 2021).

According to the Technology Acceptance Model (TAM), technology adoption is primarily influenced by users' perceptions of its usefulness and ease of use (Davis, 1989). In organizational settings, this implies that employees and managers must believe that a given technological solution will improve their operational performance before they are willing to adopt it. Njoroge (2021) found that firms with a high perception of technological usefulness reported significantly higher operational efficiency in Kenya's logistics industry. These findings are echoed by Johnson et al. (2020), who identified that the adoption of advanced logistics technologies improved delivery times by 20% and customer satisfaction in German firms.

The World Bank's Logistics Performance Index (2023) placed Kenya behind regional peers, indicating gaps in logistics modernization despite the country's strategic location and economic ambitions. Local firms often operate reactively and fail to integrate technology into their core strategies, resulting in inefficiencies that affect their service delivery and market position (KIPPRA, 2023). Moreover, high logistical costs in Kenya—estimated at nearly 29% of the value of goods—are partly attributed to outdated manual systems and insufficient data integration (Government of Kenya, 2019).

Given the growing importance of digital transformation for logistics competitiveness and Kenya's Vision 2030 agenda, there is a pressing need to examine how technological innovations influence logistics firm performance. This study aims to fill the existing empirical gap by assessing the role of technology adoption—specifically in areas such as route monitoring, tracking, and packaging—in enhancing operational efficiency, customer satisfaction, and revenue growth among Nairobi-based logistics firms.

Statement of the Problem

Logistics firms in Nairobi City County, Kenya, continue to face significant performance challenges that hinder their competitiveness in a rapidly evolving global marketplace. High operational costs, delivery inefficiencies, and limited customer satisfaction remain persistent issues. According to the World Bank's Logistics Performance Index (LPI) 2023, Kenya scored 2.89 out of 5, placing it behind regional peers such as Rwanda (3.02) and South Africa (3.38), and signaling slow improvement despite growing demand for efficient supply chains (World Bank, 2023). Additionally, a 2023 report by the Kenya Transport and Logistics Network (KTLN) indicated that over 78% of logistics firms in urban centers like Nairobi experience difficulty integrating strategic logistics functions into broader business goals, impacting both profitability and service quality.

These systemic inefficiencies are further exacerbated by customs delays, poor road infrastructure, and regulatory hurdles, all of which increase the total logistics cost in Kenya to approximately 29% of product value, nearly triple the global benchmark average of 11% (Kenya Institute for Public Policy Research and Analysis [KIPPRA], 2023). As a result, logistics firms often operate reactively, lacking the strategic agility to meet shifting customer expectations and market dynamics.

Despite a growing body of research on strategic integration practices, little has been done to examine their specific effects on logistics performance in Kenya. Previous studies (e.g., Pawaskar & Khan, 2021; Mutua et al., 2020) have broadly addressed organizational performance but have not focused on technological innovation, within logistics firms. This study sought to fill that gap by analyzing the impact of technological innovation on logistics firms in Nairobi City County, thereby contributing to policy and managerial interventions aimed at improving efficiency, resilience, and competitiveness.

Objectives of the Study

i. To assess the influence of technological innovations on performance of logistic firms in Nairobi City County, Kenya

LITERATURE REVIEW

The integration of technology into organizational operations has long fascinated scholars aiming to explain its adoption and impact on performance. A dominant model that anchors many studies in this field is the Technology Acceptance Model (TAM), originally developed by Davis (1986). TAM postulates that technology adoption is primarily influenced by *Perceived Usefulness (PU)* and *Perceived Ease of Use (PEOU)*—two constructs that predict behavioral intention and eventual system usage. The theoretical assumptions embedded in TAM suggest that individuals are rational decision-makers who evaluate technologies based on their practical utility and ease, eventually influencing organizational performance (Kamau, 2020; El-Sayed, 2019).

In logistics firms, particularly in developing economies like Kenya, the relevance of TAM becomes critical when evaluating the transition towards digitization and automation. The framework has been instrumental in explaining how logistic companies assess innovations such as automated warehouses, transport management systems, and predictive analytics tools (Njoroge, 2020; Mwangi & Muturi, 2021). While TAM traditionally focuses on individual acceptance, scholars have extended its application to organizational contexts by considering indirect influences such as culture, leadership, and digital readiness (Johnson et al., 2020; Okafor & Adebayo, 2019).

Empirical studies have corroborated the relevance of TAM in practical logistics settings. For instance, Johnson et al. (2020) report that technological innovations improved delivery times by 20% in German logistics firms, while Okafor and Adebayo (2019) observed a 25% gain in efficiency among Nigerian firms implementing similar technologies. These findings reinforce the dual role of usefulness and usability in driving adoption and, ultimately, performance enhancement. Moreover, Njoroge's (2021) Kenyan-based study reveals a significant positive correlation ($r = 0.65$) between technological adoption and firm performance, suggesting that TAM's core constructs are not merely theoretical but observable in real-world logistics operations.

Technological innovation in logistics refers to the strategic adoption of advanced systems—such as Artificial Intelligence (AI), Internet of Things (IoT), and automation—designed to streamline operations, enhance service delivery, and strengthen competitive advantage (Prajogo & Olhager, 2019). Innovations like Warehouse Management Systems (WMS) and Transportation Management Systems (TMS) enable better inventory tracking and route optimization, leading to cost reductions and improved delivery timelines (Wang et al., 2020).

Despite these benefits, implementing such technologies presents challenges. As Chuttur (2009) warns, successful technology diffusion requires an organizational culture receptive to change, comprehensive staff training, and consistent technical support. These organizational conditions can either reinforce or inhibit the actualization of TAM constructs in practice.

The impact of technological innovations on the performance of logistics firms is multi-dimensional, typically captured through metrics such as revenue growth, market share, and customer satisfaction. Performance in logistics is no longer limited to cost efficiency but encompasses strategic outcomes, such as responsiveness and customer loyalty (Huang et al., 2019; Tang & Veelenturf, 2019). Golicic and Smith (2020) argue that revenue growth, as a reflection of strategic innovation, is directly influenced by a firm's capacity to harness digital tools for enhanced productivity and reduced waste. This assertion is echoed by empirical studies like Mwangi and Wanjiku (2020), who reported an 18% improvement in firm performance attributable to innovation in logistics processes in Nairobi.

Customer satisfaction, a vital performance metric, is strongly linked to how well a firm integrates technological systems that promote transparency, speed, and service customization. Mangiaracina et al. (2019) affirm that CRM systems and digital tracking tools boost customer trust and retention by offering real-time service visibility. Similarly, Meidutė-Kavaliauskienė et al. (2021) emphasize that technological sophistication is becoming a benchmark for service quality in logistics, aligning with the expectations of a digitized customer base.

Although TAM provides a foundational lens for understanding the behavior surrounding technology adoption, it is within the empirical context—grounded in sector-specific performance outcomes—that its explanatory power is truly validated. Studies by Ochieng (2018) and Mwangi & Muturi (2021) illustrate that in Kenya's logistics sector, technology integration leads to tangible benefits in both operational and strategic domains. The conceptual model guiding this literature implicitly acknowledges this interrelationship: technological innovation, driven by perceptions of ease and utility, ultimately enhances organizational performance when mediated by adoption behaviors and contextual enablers.

Taken together, the literature supports the proposition that the strategic adoption of technology—understood through theoretical models like TAM and validated through empirical research—plays a pivotal role in transforming the performance landscape of logistics firms. It also highlights that for firms to achieve maximum benefit, attention must be given to the socio-technical interface: how users perceive, interact with, and are supported in using new systems. The integration of these insights provides a holistic understanding of the role technological innovation plays in enhancing firm-level outcomes in dynamic markets such as Kenya's logistics sector.

Conceptual Framework

A conceptual framework is defined as a structure that provides a coherent model of the relationships among the main variables of a study, offering a basis for interpreting the findings (Ravitch & Riggan, 2019). In this study, the conceptual framework in Figure 2.1, illustrates how the independent variable—technological innovations—collectively enhance the performance of logistics firms in Kenya, which is the dependent variable.

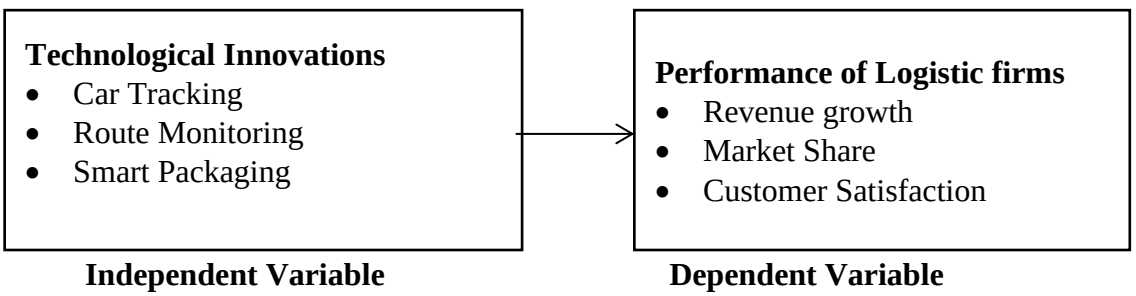

Figure 2. 1: Conceptual Framework

RESEARCH METHODOLOGY

This study used a cross-sectional survey design. This is an observational design that enables the researcher to collect data to make inferences about a population of interest. The target population of this study comprised 742 logistics companies located in Nairobi City County, Kenya (Kenya Business List Directory, 2024). Nairobi was chosen due to its strategic position as the economic and logistical heart of Kenya and East Africa, hosting the highest concentration of logistics firms in the country. The total target population therefore comprised of 742 logistics managers from the 742 firms. The study selected Logistics Managers from each firm as the units of observation because of their direct involvement in strategic decision-making and operational execution. The Yamane formula was adopted to calculate the study sample size. Therefore, the study sample size was 260 respondents. The study used simple random sampling in selecting a sample from the population. The advantage of random sampling is that it ensures that the sampling error is minimal which increases precision of techniques of estimation in use (Cooper & Schindler, 2019).

This study utilized both primary and secondary data to ensure a comprehensive analysis. The researcher collected questionnaires, code them, and enter them into the Software Package for Social Sciences (SPSS version 26) for analysis. The descriptive statistical techniques of frequency, mean, and standard deviation were used to analyse the quantitative data acquired. The results were displayed using frequency distribution tables, which kept track of how many times a score or response appears. Qualitative data collected was analysed using content analysis and presented in prose form. Inferential statistics including regression and correlation analysis was used in the study.

RESEARCH FINDINGS AND DISCUSSION

Out of the 260 questionnaires distributed to respondents, 220 were returned, and 210 were deemed valid for analysis, representing 80.8% of the total sample. An 80.8% response rate is considered high and acceptable in survey research, particularly in social sciences and business studies. A high response rate minimizes the risk of non-response bias, ensuring that the findings are representative of the target population. According to Mugenda and Mugenda (2003), a response rate of 50% is adequate, 60% is good, and above 70% is very good for generalization purposes. Similarly, Babbie (2004) argues that a response rate above 70% enhances the credibility of survey results.

Descriptive Analysis

In this section the study presents findings on Likert scale questions where respondents were asked to indicate their level of agreement with various statements that relate with the relationship between strategic integration practices and performance of logistic firms in Nairobi City County, Kenya. They used a 5-point Likert scale where 1 represents strongly disagree, 2 represents disagree, 3 represents neutral, 4 represents agree, and 5 represents strongly agree. The means and standard deviations were used to interpret the findings where a mean value of 1-1.4 was strongly disagree, 1.5-2.4 disagree, 2.5-3.4 neutral, 3.5-4.4 agree and 4.5-5 strongly agree.

Technological Innovations

The first objective of the study was to assess the influence of technological innovations on performance of logistic firms in Nairobi City County, Kenya. This section sought to determine the role of technological innovations in enhancing the performance of logistics firms in Nairobi City County, Kenya. Technological innovation was defined as the adoption and application of new technologies to improve logistics processes, operational efficiency, and customer satisfaction. Respondents were asked to rate their agreement with various statements regarding technological innovations in logistics, focusing on car tracking, route monitoring, and smart packaging. Table 1 provides a summary of the descriptive statistics for these responses.

Table 1: Descriptive Statistics on Technological Innovations

Statement	Mean	Std. Dev.
Our firm adopts the latest technological innovations in logistics.	4.348	0.431
Technology has significantly improved our operational efficiency.	4.310	0.424
Technological advancements have enhanced our customer satisfaction.	4.289	0.417
We regularly update our technology to stay competitive.	4.215	0.419
Our logistics processes are highly automated.	4.198	0.401
Technological innovations have reduced our operational costs.	4.123	0.408
Technology integration is a key part of our strategic planning.	4.231	0.414
Employees are well-trained to use new technologies implemented in the firm.	4.029	0.393
Aggregate Score	**4.218**	**0.413**

Respondents strongly agreed that their firms adopt the latest technological innovations in logistics, as reflected by a mean score of 4.348 (Sd= 0.431), showing a clear commitment to staying at the forefront of technology adoption. The statement that technology significantly improves operational efficiency scored a mean of 4.310 (Sd= 0.424), demonstrating that technological innovation directly contributes to optimizing operational processes. Similarly, the role of technological advancements in enhancing customer satisfaction received a mean score of 4.289 (Sd= 0.417), highlighting the perceived value of innovation in meeting customer needs.

Respondents agreed that their firms regularly update technologies to maintain competitiveness, with a mean score of 4.215 (Sd= 0.419). Additionally, the extent of automation in logistics processes scored 4.198 (Sd=0.401), emphasizing the role of automated systems in streamlining operations. Technological innovations were also found to reduce operational costs, with a mean of 4.123 (Sd= 0.408), showing that technology adoption leads to financial efficiencies. The integration of technology into strategic planning received strong agreement, with a mean of 4.231 (Sd= 0.414), reflecting the strategic importance of technological advancements. Finally, respondents agreed that employees are well-trained to use new technologies, as shown by a mean score of 4.029 (Sd= 0.393), which underscores the role of training in ensuring successful technology adoption.

The aggregate score of 4.218 demonstrates a strong agreement that technological innovations are integral to the performance of logistics firms. These findings align with Njoroge (2021), who established a significant positive correlation between technology adoption and operational efficiency in Kenyan logistics firms. The results also resonate with the Technology Acceptance Model (TAM), which emphasizes the importance of perceived usefulness and ease of use in driving technology adoption. Johnson et al. (2020) observed that technological advancements improve delivery times and customer satisfaction by 20 percent, a finding that is consistent with the study's results. Additionally, the role of automation in enhancing operational efficiency is supported by Mwangi and Wanjiku (2020), who found an 18 percent performance improvement in Kenyan logistics firms adopting advanced technologies. These findings reaffirm the critical role of technological innovations in fostering efficiency, competitiveness, and customer satisfaction within the logistics sector

Performance of Logistics Firms

The main objective of this study was to establish the influence of strategic integration practices on the performance of logistic firms in Nairobi City County, Kenya. This section evaluated the overall performance of logistics firms in Nairobi City County, focusing on operational efficiency, customer satisfaction, market share, and innovation. Table 2 summarizes the descriptive statistics for these responses.

Table 2: Descriptive Statistics on Performance of Logistics Firms

Statement	Mean	Std. Dev.
Our firm's operational efficiency has improved over the past year.	4.192	0.413
Customer satisfaction levels have increased due to our services.	4.231	0.419
Our market share has grown significantly.	4.102	0.415
Profitability has improved as a result of our strategic initiatives.	4.167	0.417
Our firm has successfully implemented cost-saving measures.	4.214	0.416
Employee productivity has increased in the past year.	4.198	0.407
We have achieved our key performance indicators (KPIs) consistently.	4.123	0.403
Our firm is recognized for innovation in logistics services.	4.276	0.420
Aggregate Score	**4.188**	**0.414**

Respondents agreed that operational efficiency had improved over the past year, with a mean score of 4.192 (Sd= 0.413), reflecting the impact of strategic practices on logistics performance. Customer satisfaction was rated highly, with a mean of 4.231 (Sd= 0.419), showing that firms have succeeded in meeting customer needs effectively. The statement regarding market share growth received a mean score of 4.102 (Sd= 0.415), demonstrating that firms are expanding their market presence. Profitability improvements resulting from strategic initiatives scored 4.167 (SD= 0.417), highlighting the financial benefits of effective management practices. Cost-saving measures were rated positively, with a mean of 4.214 (Sd= 0.416), emphasizing their role in enhancing profitability. Employee productivity received strong agreement, with a mean score of 4.198 (Sd=0.407), showing the value of workforce engagement in achieving performance goals. Further, consistent achievement of key performance indicators scored 4.123 (Sd=0.403), indicating alignment between strategic objectives and operational outcomes. Lastly, recognition for innovation in logistics services scored 4.276 (Sd= 0.420), reflecting the sector's focus on adopting innovative practices.

The aggregate score of 4.188 (Sd= 0.414) indicates strong agreement on the positive performance outcomes of logistics firms. These findings align with Johnson et al. (2020), who emphasized that strategic integration practices, such as innovation and engagement, significantly improve operational and financial performance. The results also support Resource-Based View Theory, which emphasizes leveraging internal capabilities for competitive advantage. The findings also resonate with Mwangi and Muturi (2021), who observed a 15 percent performance improvement in Kenyan logistics firms adopting strategic practices. The study confirms that operational efficiency, customer satisfaction, market share growth, and innovation are key indicators of successful logistics firm performance, reinforcing the importance of strategic integration in achieving these outcomes.

Correlation Analysis

Correlation analysis was conducted to examine the strength and direction of relationships between the independent variables—technological innovations—and the dependent variable, the performance of logistics firms. Using the Pearson correlation coefficient (r), the analysis measured associations on a scale from -1 to +1, where values above 0.7 indicate strong correlations, values between 0.5 and 0.7 are moderate, and values between 0.3 and 0.5 are weak (Cohen, 1988).

Table 3: Correlations

		Performance of Logistic Firms	Technological Innovations
Performance of Logistic Firms	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	220	
Technological Innovations	Pearson Correlation	.590**	1
	Sig. (2-tailed)	.000	
	N	220	220

For technological innovations, the correlation with firm performance was r=0.590, with a p-value of 0.000, indicating a very strong positive and statistically significant relationship. This demonstrates that advancements in technology adoption and integration significantly contribute to better logistics performance. These findings are consistent with Johnson et al. (2018), who noted that implementing cutting-edge technologies enhances operational efficiency, streamlines supply chains, and increases customer satisfaction in the logistics sector.

Simple Linear Regression Analysis

A linear regression analysis was conducted to assess the impact of Technological Innovations on firm performance.

Table 4: Regression for Technological Innovations and Firm Performance

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Technological Innovations	0.590[a]	0.348	0.338	1.730

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	699.315	1	178.642	70.721	0.000[b]
Residual	178.642	218	2.526		
Total	877.957	219			

Beta Coefficients

Predictor	Unstandardized Coefficients (B)	Std. Error	t	Sig.
Constant	3.417	0.201	17.000	0.000
Technological Innovations	0.315	0.039	8.077	0.000

The R-Squared value of 0.348 suggests that 34.8% of the variation in firm performance is due to Technological Innovations, meaning that firms that invest in technology experience measurable improvements in efficiency, customer satisfaction, and operational accuracy. From the analysis of variance, since $p = 0.000 < 0.05$, the regression model is statistically significant, confirming that Technological Innovations positively impact firm performance.

The fitted regression model is:

$$\textbf{Performance} = 3.417 + 0.315(\textbf{Technological Innovations})$$

For every unit increase in Technological Innovations, firm performance increases by 0.315 units. The t-statistic ($t = 8.077$, $p = 0.000$) confirms that Technological Innovations have a highly significant impact on firm performance. Since the absolute t-value is much greater than 2, it suggests that technological advancements strongly enhance logistics performance. This highlights the crucial role of technology in driving logistics performance. These findings align with the Technology Acceptance Model (TAM), which states that technological adoption depends on perceived usefulness and ease of use (Davis, 1986). Johnson et al. (2020) found that logistics firms integrating automation, AI, and IoT solutions experienced a 20% improvement in operational efficiency and delivery times. Further research by Ochieng (2018) revealed that firms implementing digital logistics management tools enhanced customer satisfaction by 25%, supporting the argument that technological investments drive superior firm performance. Given these findings, logistics firms should prioritize investments in automation, cloud-based logistics management, and AI-powered demand forecasting to enhance efficiency and market competitiveness.

Conclusions

Technological innovations are vital for improving operational efficiency, customer satisfaction, and cost management. Firms that invest in advanced technologies and integrate them into their strategic plans experience substantial performance gains and competitive advantages in the logistics sector.

Recommendations

To fully leverage the benefits of technological innovations, logistics firms should adopt state-of-the-art technologies such as automated systems, real-time tracking, and predictive analytics. These tools will streamline operations, enhance efficiency, and improve customer satisfaction. Regular technology upgrades and investments in research and development will ensure that firms remain competitive in the rapidly evolving logistics sector. Employee training programs should accompany technological adoption to equip staff with the necessary skills to operate new systems effectively. Furthermore, firms should integrate technology considerations into their strategic planning to align innovation efforts with business objectives, enabling a proactive response to market demands.

Suggestions for Further Studies

Future research could investigate additional factors such as the impact of regulatory frameworks, workforce diversity, and sustainable practices, including green logistics and carbon footprint reduction. Comparative studies across different regions or countries could uncover broader trends and provide insights into regional differences in logistics performance drivers. These areas of inquiry could offer a more comprehensive view of the determinants of logistics performance, guiding both academic exploration and practical application in the sector.

REFERENCES

Acar, A. Z., & Atadeniz, M. (2020). Automation tools in logistics: Operational efficiency and revenue impacts. *Operations and Supply Chain Management Journal, 13*(2), 45–52.

Babbie, E. (2004). *The practice of social research* (10th ed.). Wadsworth Publishing.

Chuttur, M. Y. (2009). Overview of the Technology Acceptance Model: Origins, developments, and future directions. *Sprouts: Working Papers on Information Systems, 9*(37). https://aisel.aisnet.org/sprouts_all/290/

Cooper, D. R., & Schindler, P. S. (2011). *Business research methods* (11th ed.). McGraw-Hill/Irwin.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340. https://doi.org/10.2307/249008

El-Sayed, A. (2019). Technology adoption and TAM: A contemporary review. *International Journal of Innovation Science, 11*(2), 101–115. https://doi.org/10.1108/IJIS-05-2018-0050

Golicic, S. L., & Smith, C. D. (2020). Revenue growth as a performance measure in logistics. *Journal of Business Logistics, 41*(1), 25–39. https://doi.org/10.1111/jbl.12223

Government of Kenya. (2019). *National transport and logistics policy*. Ministry of Transport, Infrastructure, Housing, Urban Development and Public Works.

Huang, Y., Qian, L., & Xu, S. (2019). Logistics innovation capability and performance. *Transport Reviews, 39*(3), 357–375. https://doi.org/10.1080/01441647.2018.1513254

Johnson, W., Brown, M., & Albrecht, H. (2020). The role of technological innovations in enhancing logistics firm performance in Germany. *European Logistics Journal, 7*(1), 88–101.

Kamau, M. (2020). Technology acceptance in Kenyan logistics firms: A TAM perspective. *Kenya Journal of Business Research, 12*(2), 64–79.

KIPPRA. (2023). *Logistics sector review*. Kenya Institute for Public Policy Research and Analysis.

Kimani, J., & Kihara, A. (2020). Logistics challenges in Nairobi City County: A strategic management perspective. *African Journal of Business Strategy, 5*(1), 13–26.

Mangiaracina, R., Perego, A., Salvadori, G., & Tumino, A. (2019). A review of digital transformation in logistics. *International Journal of Physical Distribution & Logistics Management, 49*(10), 1213–1235. https://doi.org/10.1108/IJPDLM-11-2018-0352

Meidutė-Kavaliauskienė, I., Aranskis, A., & Litvinenko, M. (2021). Consumer satisfaction in the logistics sector. *Transport, 36*(2), 131–139. https://doi.org/10.3846/transport.2021.14743

Mugenda, O. M., & Mugenda, A. G. (2003). *Research methods: Quantitative and qualitative approaches*. ACTS Press.

Mungai, J., & Karanja, G. (2021). Adoption of logistics innovations in emerging markets: Evidence from Kenya. *International Journal of Supply Chain Innovation, 6*(3), 77–89.

Mutua, K., Ochieng, J., & Ogada, T. (2020). Organizational performance and strategy in the logistics sector: A Kenyan perspective. *Journal of Strategic Business Management, 9*(2), 53–69.

Mwangi, P., & Muturi, W. (2021). Strategic integration practices and logistics performance in Kenya. *Journal of Logistics and Supply Chain Management, 8*(1), 23–35.

Mwangi, P., & Ngugi, M. (2021). Operational inefficiencies and logistics firm performance in Nairobi. *East African Journal of Business and Economics, 3*(2), 42–55.

Mwangi, P., & Wanjiku, C. (2020). Technological innovations and firm performance in the Kenyan logistics sector. *Kenya Journal of Logistics and Procurement, 5*(1), 14–29.

Njoroge, J. (2021). The impact of technology on logistics performance in Kenya. *African Journal of Logistics and Supply Chain, 6*(2), 89–105.

Okafor, C. J., & Adebayo, R. A. (2019). Technological innovations and logistics efficiency in Nigeria. *African Journal of Logistics and Supply Chain, 5*(2), 56–68.

Pawaskar, M., & Khan, S. (2021). Organizational performance and strategic alignment: Logistics sector case study. *Indian Journal of Management Research, 14*(4), 200–216.

Prajogo, D., & Olhager, J. (2019). Technological innovation and logistics performance: A review of empirical evidence. *International Journal of Operations & Production Management, 39*(1), 88–113. https://doi.org/10.1108/IJOPM-12-2017-0784

Ravitch, S. M., & Riggan, M. (2019). *Reason & rigor: How conceptual frameworks guide research* (2nd ed.). SAGE Publications.

Tang, C. S., & Veelenturf, L. P. (2019). The strategic role of logistics in a digital future. *Transportation Research Part E: Logistics and Transportation Review, 129*, 1–11. https://doi.org/10.1016/j.tre.2019.06.002

Wang, X., Yu, Y., & Frazelle, E. (2020). Predictive analytics in logistics: A case study approach. *Journal of Business Logistics, 41*(2), 132–149. https://doi.org/10.1111/jbl.12223

World Bank. (2023). *Logistics performance index: Global ranking report*. https://lpi.worldbank.org